**Amendments to the Specification:**

On page 1, Please amend the first paragraph under the title as follows:

~~This is a continuation-in-part of United States Patent Application attorney docket number 24610-20035.21, filed October 23, 1992, which is a continuation-in-part of United States Patent Application Serial No. 07/935,444, filed 25 August 1992, which is a continuation-in-part of United States Patent Application Serial No. 799,824, filed 26 November 1991, and each incorporated herein by reference.~~

Cross-Reference to Related Applications

This application is a is a divisional of application serial no. 10/024,818, filed on December 18, 2001, which is a divisional of application serial no. 08/599,738, filed on December 12, 1996, now U.S. Patent No. 6,380,368, which is a divisional of application serial no. 07/976,103, filed on November 25, 1992, now U.S. Patent No. 5,645,985. Application serial no. 07/976,103 is a continuation-in-part of application serial no. 07/965,941, filed on October 23, 1992, now abandoned, and a continuation of application serial no. 08/338,352, filed on November 14, 1994, now U.S. Patent No. 6,235,887, which is a continuation-in-part of application serial no. 07/935,444, filed August 25, 1992, now abandoned, which is a continuation-in-part of application serial no. 07/799,824, filed November 26, 1991, now U.S. Patent No. 5,484,908.

On page 82, please amend the paragraphs (lines 5 through 34) as follows:

Example 2

Formation of Triple Helix Structures Using Oligomers (ON) Containing 5-Propynyl Uracil Residues that Bind to Duplex DNA

Three oligomers were synthesized as follows:

ON-1 5'TC'TC'TC'TC'TC'TTTTT 3' (SEQ ID NO: 1)

ON-2 5'TC'TC'TC'TC'TC'U*U*U*U*U* 3' (SEQ ID NO:2)

ON-3 5' TC'TC'TC'U*C'U*C'U*TU*TU* 3' (SEQ ID NO:3)

Each oligomer (ON) was hybridized with duplex DNA containing the target sequence 5' AGAGAGAGAGAAAAA 3' (SEQ ID NO:4). Hybridization was carried out in 140 mM KCl, 5 mM $MgCl_2$, 5 mM $Na_2HPO_4$, pH 6.6. Thermal stability, $T_m$, of the resulting triple helix formed between each oligomer and the target sequence was determined. The following $T_m$ values were obtained, ON-1 (control oligomer) was 42.1 °C, ON-2 was 48.1 °C and ON-3 was 55 °C. The increased $T_m$ values of ON-2 and ON-3 were not expected and demonstrated that the triple helix formed was more stable than the corresponding control triple helix structure.

Example 3

Binding of Oligomers Containing 5-Propynyl Uracil or
5-Propynyl Cytosine To Single-Stranded RNA

Oligomers were synthesized as follows:

ON-1 5'TC'TC'TC'TC'TC'TTTTT 3' (SEQ ID NO: 1)
ON-3 5' TC'TC'TC'U*C'U*C'U*TU*TU* 3' (SEQ ID NO:3)
ON-4 5' TC*TC*TC*TC*TC*TTTTT 3' (SEQ ID NO: 5)

On page 83, please amend the paragraphs (lines 1 through 24) as follows:

The oligomers were hybridized with a single-stranded target RNA sequence, 5' AAAAAGAGAGAGAGA 3' (SEQ ID NO:6), in 140 mM KCl, 5 mM $MgCl_2$, 5 mM $Na_2HPO_4$, pH 6.6. The following $T_m$ values for the duplexes were obtained; ON-1 (control) was 65.5 °C, ON-3 was 74.0 °C and ON-4 was 73.0 °C. Duplexes formed with ON-3 and ON-4 were more stable than the control oligomer. Surprisingly, ON-3 and ON-4 gave increased $T_m$ values which demonstrated that the duplex formed was more stable than the corresponding control duplex structure.

Example 4

Formation of Triple Helix Structures at Elevated pH

Triple helix formation at elevated pH was demonstrated using ON-1 as a control and ON-5, 5' U*C'U*C'U*C'U*C'U*C'U*U*U*U*U* 3' (SEQ ID NO:7). Oligomers were hybridized with duplex target DNA, as described in Example 2 except that

the buffer was at pH 7.4. $T_m$ values of the triple helix were then determined. ON-1 had a $T_m$ of 27.1 while ON-5 had a $T_m$ of 51.5. Thus, oligomers containing 5-propynyl uracil were capable of triplex formation at high pH levels, while the control oligomer formed triplex structure only at temperatures that are below physiological.

On page 84, please amend the paragraph (lines 26 through 34) as follows:

ON-1 5'TC'TC'TC'TC'TC'TTTTT 3' (SEQ ID NO: 1)

ON-6 5' TC'TC'TC'U'C'U'CU'TU'TU' 3' (SEQ ID NO: 8)

ON-7 5' TC'TC'TC'TC'TC'U'U'U'U'U' 3' (SEQ ID NO:9)

Base residues designated U' correspond to 5-(3-methyl-1-butynyl)uracil. The oligomers were hybridized with duplex DNA containing the target sequence, 5' AGAGAGAGAGAAAAA 3' (SEQ ID NO:4).

On page 85, please amend the paragraph (lines 15 through 17) as follows:

**DNA Duplex Target:** 5' AGAGAGAGAGAAAAAGGA $^{T}$ T (SEQ ID NO:10)

3' TCTCTCTCTCTTTTTTTCCT $_{T}$ T (SEQ ID NO:11)

**RNA Target:** 5' AAAAAGAGAGAGAGA 3' (SEQ ID NO:12)

On page 85, please amend the paragraph (lines 27 through 29) as follows:

ON-8 5' TC'TC'TC'U*C'U*C'U*TU*TU* 3' (SEQ ID NO:3)

ON-9 5' TC*TC*TC*TC*TC*TTTTT 3' (SEQ ID NO: 5)

ON-10 5' U*C* U*C* U*C* U*C* U*C*U*U*U*U*U* (SEQ ID NO: 54)

On page 88, please amend the paragraph (lines 5 through 9) as follows:

| ON | ON Linkage Diester | Thioate | $\Delta T_m$ |
|---|---|---|---|
| ATTTTC'TTC'ATTTTTTC'TTC'(SEQ ID NO:14) | 54.0 | 40.0 | -14.0 |
| AU*U*U*U*C'U*U*C'AU*U*U*U*U*U*C'U*U*C' (SEQ ID NO:15) | 76.5 | 68.5 | -8.0 |
| AU*U*U*U*C*U*U*C*AU*U*U*U*U*U*C*U*U*C* (SEQ ID NO:16) | 82.5 | 76.5 | -6.0 |

On page 88, please amend the paragraph (lines 18 through 19) as follows:

ON-21: AU*U*U*U*C'U*U*C'AU*U*U*U*U*U*C'U*U*C' (SEQ ID NO: 17)

ON-22: U*U*AU*U*AU*C'U*U*C'U*U*C'U*U*U*U*C'U* (SEQ ID NO:25)

On page 89, please amend the paragraph (lines 15 through 24) as follows:

ON 11: 5' ATTTTC'TTC'ATTTTTTC'TTC'3'(SEQ ID NO:14)

ON 12: phosphorothioate form of ON-11

ON13: 5'AU*U*U*U*C*U*U*C*AU*U*U*U*U*U*C*U*U*C*3'(SEQ ID NO:16)

ON 14: phosphorothioate form of ON-13

ON 15: phosphorothioate 5' C*U*U*C*AU*U*U*U*U*U*C*U*U*C* 3' (SEQ ID NO: 18)

ON 16: phosphorothioate 5' C*U*U*C*AU*U*U*U*U*U*C*U* 3' (SEQ ID NO: 19)

ON 17: phosphorothioate 5' C*U*U*C*AU*U*U*U*U*U* 3' (SEQ ID NO: 20)

ON 18: phosphorothioate 5' C*U*U*C*AU*U*AU*U*U*C*U*U*C* 3' (SEQ ID NO: 21)

ON 19: phosphorothioate 5' C*U*U*U*C*U*U*C*U*U*AC*U*U*C* 3' (SEQ ID NO: 22)

On page 91, please amend the paragraph (lines 11 through 17) as follows:

In addition to inhibition of TAg synthesis, a phosphorothioate oligomer, ON 20, 5' U*U*GC'C'GU*U*U*U*C'AU*C'AU*AU*U*U*AAU* 3' (SEQ ID NO:23), that is

complementary to the β-galactosidase RNA, was able to inhibit β-galactosidase in a sequence specific manner with an $IC_{50}$ of 0.25 μm. ON 20A, ON 20 with T and C', did not inhibit β-galactosidase expression in a sequence specific manner.

On page 92, please amend the paragraph (lines 27 through 34) as follows:

Target Sequence Binding and Target Gene Inhibition. An oligomer (5' ATTTTC'TTC'ATTTTTTC'TTC' 3'(SEQ ID NO:14)) was systematically varied, using the phosphodiester antisense oligomer, ON-11, as a control. The phosphorothioate analog, ON-12, of the same oligomer was also prepared, but had no altered bases. The corresponding oligomer having the 5-substituted bases of

On page 93, please amend the paragraph (lines 16 through 20) as follows:

Both the 9-mer (5' C*U*U*C*AU*U*U*U* 3' (SEQ ID NO:24)) and 11-mer (ON-17) phosphorothioates were able to inhibit T antigen synthesis when they contain the 5-substituted bases of the invention. However, the 9-mer had relatively weak sequence-specific inhibitory activity.

On page 93, please amend the paragraph (lines 28 through 29) as follows:

5' UT oligomer: 5'-GCC TCC TCA CTA CTT CTG GA-3' (SEQ ID NO:26)

AUG oligomer: 5'-CAT CTT TGC AAA GCT TTT TG-3' (SEQ ID NO:27)

On page 104, please amend the paragraph (lines 9 through 13) as follows:

ON-1 5' TC'TC'TC'TC'TC'TTTTT 3' (SEQ ID NO:1)

ON-23 5' TC'TC'TC'TC'TC'U*U*U*U*T 3' (SEQ ID NO:28)

ON-24 5' TC'TC'TC'TC'TC'T•TT•TT 3' (SEQ ID NO:29)

ON-25 5' TC'TC'TC'TC'TC'U*•U*U*•U*T 3' (SEQ ID NO:30)

ON-26 5' TC'TC'TC'TC'TC'U*oU*U*oU*T 3' (SEQ ID NO:31)

On page 104, please amend the paragraph (lines 21 through 23) as follows:

**DNA Duplex Target:** 5' AGAGAGAGAGAAAAAGGA $^{T}$ T (SEQ ID NO:10)

3' TCTCTCTCTCTTTTTCCT $_T$ T (SEQ ID NO:11)

**RNA Target:** 5' AAAAAGAGAGAGAGA 3' (SEQ ID NO:12)

On page 105, please amend the paragraph (lines 19 through 24) as follows:

ON-1 5' TC'TC'TC'TC'TC'TTTTT 3' (SEQ ID NO:1)

ON-28 5' TC'TC'TC'TC'TC'$U^PU^PU^PU^PU^P$ 3' (SEQ ID NO:32)

ON-29 5' TC'TC'TC'$U^P$C'$U^P$C'$U^P$T$U^P$T$U^P$ 3' (SEQ ID NO:33)

ON-30 5' $TC^PTC^PTC^PTC^PTC^P$TTTTT3' (SEQ ID NO:34)

ON-43 5' TC'TC'TC'TC'TC'$U^TU^TU^TU^TU^T$ 3' (SEQ ID NO:35)

ON-44 5' TC'TC'TC'$U^T$C'$U^T$C'$U^T$T$U^T$T$U^T$ 3' (SEQ ID NO:36)

On pages 105, please amend the paragraph (page 105, line 32 to page 106, line 1) as follows:

**DNA Duplex Target:** 5' AGAGAGAGAGAAAAAGGA $^T$ T (SEQ ID NO:10)

3' TCTCTCTCTCTTTTTCCT $_T$ T (SEQ ID NO:11)

**DNA/RNA Target Sequence:** 5' AAAAAGAGAGAGAGA 3' (SEQ ID NO:12)

On page 106, please amend the paragraph (lines 29 through 32) as follows:

ON-1 5' TC'TC'TC'TC'TC'TTTTT 3' (SEQ ID NO:1)

ON-32 5' U*C#U*C#U*C#U*C#U*C#U*U*U*U*U* 3' (SEQ ID NO:37)

ON-33 5' TTTMTTTMMTMMTTTTT 3' (SEQ ID NO: 38)

ON-34 5' U*U*U*MU*U*U*MMU*MMU*U*U*U*U* 3' (SEQ ID NO: 39)

On page 107, please amend the paragraph (lines 8 through 9) as follows:

**DNA Duplex Target:** 5' AGAGAGAGAGAAAAA 3' (SEQ ID NO:4)

3' TCTCTCTCTCTTTTT 5' (SEQ ID NO:40)

On page 107, please amend the paragraph (lines 19 through 20) as follows:

**DNA Duplex Target:** 5' AAAGAAAGGAGGAAAAA 3' (SEQ ID NO:41)

3' TTTCTTTCCTCCTTTTT 5' (SEQ ID NO:42)

On page 108, please amend the paragraph (lines 18 through 24) as follows:

ON-1 5' TC'TC'TC'TC'TC'TTTTT 3' (SEQ ID NO:1)

ON-35 5' TC'TC'TC'TC'TC'T'T'T'T'T' 3' (SEQ ID NO:43)

ON-36 5' TC'TC'TC'TC'TC'U*U*U*U*U* 3' (SEQ ID NO:44)

ON-37 5' TC'TC'TC'TC'TC'$U^XU^XU^XU^XU^X$ 3' (SEQ ID NO:45)

ON-38 5' TC''TC''TC''TC''TC''TTTTT 3' (SEQ ID NO:46)

ON-39 5' TC*TC*TC*TC*TC*TTTTT 3' (SEQ ID NO:47)

ON-40 5' $TC^XTC^XTC^XTC^XTC^X$TTTTT 3' (SEQ ID NO:48)

On page 108, please amend the paragraph (line 30) as follows:

**RNA Target:** 5' AAAAAGAGAGAGAGA 3' (SEQ ID NO: 49)

On page 110, please amend the paragraph (lines 1 through 7) as follows:

ON-41 5' U*C'U*C'U*U*U*U*U*C'U*U*C'U*C'U*U*U*C'X*U*U*U*U*U*U*U* 3' (SEQ ID NO:50)

ON-42 5' U*C'U*C'U*U*U*U*U*C'U*U*C'U*C'U*U*U*C'X*U*U* 3' (SEQ ID NO:51)

The DNA target sequence used was:

**DNA Duplex Target**: 5' AGAGAAGGGAGAAGAGAAAGAAATTTTTTTTT 3'(SEQ ID NO:52)

3' TCTCTTTTTTCTTCTCTTTCTTTAAAAAAAAA 5'(SEQ ID NO:53)